

CLAIMS

1. Regulating device for the linear regulation of an actuating element which is connected for movement to a ball spindle drive for the conversion of a rotational movement into a linear movement, whereby the rotational movement can be transferred to the spindle drive from at least one motor via a gear unit, characterized in that the gear unit exhibits a self-locking, helically toothed spur-wheel gear, which is formed as a double helical gear with at least one first and second spiral-toothed gearwheel, whereby in each case at least one motor is arranged at both sides of the ball spindle drive and each of the motors is connected for movement with a second spiral-toothed gearwheel.
2. Regulating device according to claim 1, characterized in that a ball nut of the ball spindle drive is supported rotationally, but axially immovable in a housing of the regulating device and a rotating spindle of the ball spindle drive is connected for movement to the actuating element.
3. Regulating device according to claim 1, characterized in that the rotating spindle and the bar shaped actuating element are arranged one behind the other in the axial direction.
4. Regulating device according to claim 2, characterized in that the ball nut is connected to a first spiral-toothed gearwheel and the motor to the second spiral-toothed gearwheel of the double helical gear.
5. Regulating device according to claim 1, characterized in that the motor is an electric motor.
6. Regulating device according to claim 1, characterized in that both second spiral-toothed gearwheels engage the first spiral-toothed gearwheel.
7. Regulating device according to claim 1, characterized in that the drive shafts of the motors arranged at both sides run parallel to one another.
8. Regulating device according to claim 1, characterized in that at least two motors are arranged on each drive shaft.

9. Regulating device according to claim 1, characterized in that a reduction gear, in particular a so-called harmonic drive, is arranged between the drive shaft and the second spiral-toothed gearwheel.
10. Regulating device according to claim 9, characterized in that the drive shaft is connected for movement with the flexible, cup-shaped toothed sleeve of the harmonic drive.
11. Regulating device according to claim 1, characterized in that a diagonal angle of the helical gearing of the first and/or the second spiral-toothed gearwheel is in the range from 50 to 90° and particularly in the range from 65 to 85°.
12. Regulating device according to one claim 1, characterized in that the transmission ratio of the double helical gear is between $i = 25$ and $i < 1$.
13. Regulating device according to claim 1, characterized in that the housing is formed as a module housing which can be flange-mounted on a control mechanism, which is particularly deployed in the field of gas and/or oil supply.
14. Regulating device according to claim 13, characterized in that the module housing exhibits a first and second housing half, whereby the motor and the ball spindle drive are located in the first housing half.
15. Regulating device according to claim 13, characterized in that an intermediate cover is arranged within the module housing for at least single-ended support of the second spiral-toothed gearwheels.
16. Regulating device according to claim 15, characterized in that a position sensor for the acquisition of the position of the rotating spindle and/or the ball nut is arranged on the intermediate cover.
17. Regulating device according to claim 1, characterized in that the first spiral-toothed gearwheel is mounted, in particular releasably, on an end of the ball nut facing away from the actuating element.

18. Regulating device according to claim 2, characterized in that an intermediate ring, in particular capable of being screwed externally onto the ball nut, is arranged between the ball nut and the first spiral-toothed gearwheel.
19. Regulating device according to claim 2, characterized in that the ball nut is held immovably in the axial direction by pivot bearings and a retention ring which is mounted in the housing, releasably where applicable.
20. Regulating device according to claim 2, characterized in that the actuating element and/or the rotating spindle are supported rotationally rigidly in the housing, in particular using a splined shaft.
21. Regulating device according to claim 5, characterized in that the electric motors are synchronized.
22. Regulating device according to claim 1, characterized in that the first and second spiral-toothed gearwheels exhibit 1 to 10, preferably 1 to 7 and especially preferably 1 to 4 teeth.
23. Regulating device according to claim 1, characterized in that the drive shafts are synchronized in their rotational movements using a mechanical coupling device.